

Remarks/Arguments

I. Status of the Claims

In the final Office Action, the Examiner indicated that claims 1-18, 35 and 36 are pending and rejected claims 1-18, 35 and 36 under 35 U.S.C. §103(a).

Claims 19-34 and 37-39 were previously canceled in light of a restriction requirement.

Claims 1-18, 35 and 36 are pending for reconsideration.

II. Rejections of Claims 1-18, 35 and 36 under 35 U.S.C. §103(a)

At pages 4-5, item 4 of the final Office Action, claims 1-6, 8-18, 35 and 36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hartog et al. (U.S. Patent No. 6,236,542) in view of Labib et al. (U.S. Patent No. 6,454,871).

At pages 5-6, item 5 of the final Office Action, claims 7 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hartog et al. (U.S. Patent No. 6,236,542) in view of Labib et al. (U.S. Patent No. 6,454,871) and further in view of Small et al. (U.S. Patent No. 6,251,150).

These rejections are respectfully traversed to the extent that they are maintained. As discussed below, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the primary reference to Hartog et al. or to combine the reference teachings as suggested by the Examiner. Moreover, as discussed below, there was no reasonable

expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner.

The Hartog et al. patent fails to disclose or suggest a self-cleaning colloidal slurry composition having “a surfactant adsorbed and/or precipitated onto a surface of at least one of the substrate and the colloidal particles, the surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles” as recited in each of the independent claims, i.e., claims 1 and 35. That is, the Hartog et al patent does not disclose or suggest including a surfactant in the colloidal slurry composition that forms a steric hindrance barrier between the colloidal particles and substrate surface.

In the final Office Action, the Examiner admits to this deficiency in the primary reference to Hartog et al. stating, “Hartog et al fail to teach the composition comprises a surfactant that forms a steric hindrance barrier between the substrate and the colloidal particles.” In the final Office Action, the Examiner indicates that this deficiency in the primary reference to Hartog et al. is cured by the secondary reference to Labib et al. However, the Applicants respectfully disagree.

There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the primary reference to Hartog et al. or to combine the reference teachings as suggested by the Examiner. The teachings of the Labib et al. patent referred to by the Examiner are in the context of a mixed-phase cleaning solution for removing biofilm, debris, contaminants and the like from surfaces of passageways. See, Labib et al., col. 1, lines 8-12 and col. 15, lines 1-22. The superfinishing polish slurry described in the primary reference to

Hartog et al. is not a cleaning solution, is not mixed-phase, and is not for removing biofilm, debris, contaminants and the like from surfaces of passageways. It would not have been obvious to one of ordinary skill in the art to apply teachings of the Labib et al. patent relating to a mixed-phase cleaning solution for removing biofilm, debris, contaminants and the like from surfaces of passageways to the superfinishing polish slurry described in the Hartog et al. patent.

The conventional superfinishing polish process and slurry described in the Hartog et al. patent, and the problems associated therewith, are discussed in the Background section of the present application. See, for example, the discussion at page 4, lines 1-19 of the present application. In the conventional superfinishing polish process and slurry of the Hartog et al. patent, colloidal silica particles attach to the surface being polished not only by the usual London dispersion forces, van der Waals forces and hydrogen bonding, but unlike NiP, also by molecular bonding. Standard methods of scrubbing with soaps using polyvinyl alcohol (PVA) pads, ultrasonics or megasonics will not remove any significant percentage of such molecular bonded silica particles. When used in conjunction with the superfinishing polish process and slurry of the Hartog et al. patent, such conventional soap-based cleaning processes leave residual slurry material that must be removed from the surface of the disk substrates by a further cleaning mechanism (i.e., etching, micropolishing or polish etch). If these particles are left in place on the glass substrate, glide defects occur that can ultimately cause disk drive failure. These glide defects further cause magnetic defects, corrosion and decreased disk life. However, when used in conjunction with the self-cleaning colloidal slurry of the present invention, such conventional soap-based cleaning processes completely remove the remaining slurry material leaving the surface of the disk substrates free from contamination. See, for example, the discussion at page 17, lines 1-11 of the present application.

The existence of the steric hindrance barrier in the superfinishing polish slurry goes to the heart of the present invention -- the steric hindrance barrier prevents the colloidal particles from ever bonding to the surface of disk substrate in the first place and permits removal of substantially all of the remaining contamination from the surface of the substrate using standard soap solutions. The steric hindrance barrier takes away molecular bonding, acid/base bonding, hydrogen bonding, and some or all of the van der Waals forces (amount depends on the surfactant composition and structure chosen) for the colloidal particles sticking to the surface of disk substrate. This allows conventional soap-based cleaning of disk substrate and removes the requirement for special and expensive extra cleaning steps, such as etching (undercutting) or micropolishing or polish etch, or combinations thereof.

At most, one of ordinary skill in the art having the references before him would have been motivated by the teachings of the Labib et al. patent to introduce a surfactant into a post-superfinishing cleaning solution used to clean substrates subsequent to the substrates being superfinished using the superfinishing polish process and slurry described in the Hartog et al. patent. When used in conjunction with the superfinishing process and slurry described in the Hartog et al. patent, such a post-superfinishing cleaning solution leaves residual slurry material that must be removed from the surface of the disk substrates by a further cleaning mechanism (i.e., etching, micropolishing or polish etch). See, for example, the discussion at page 17, lines 4-7 of the present application. As described in the Labib et al. patent, the motivation would be to promote faster and more efficient cleaning and removal of residues. See, Labib et al., col. 15, lines 11-14. Such residues remain subsequent to the superfinishing polish process and slurry described in the Hartog et al. patent. To say that the teachings of the Labib et al. patent would have motivated one of ordinary skill in the art at the time of the invention to

introduce a surfactant into the superfinishing polish slurry described in the Hartog et al. patent, rather than into a post-superfinishing cleaning solution, is to use forbidden hindsight.

In the final Office Action, the Examiner states, “Applicants argue that one of ordinary skill in the art would not be motivated to apply teachings of adding the surfactant of Labib et al relating a cleaning composition into the superfinishing polish composition of Hartog et al because superfinishing polishing composition is not a cleaning composition. In response, examiner states that the argument is not persuasive because Labib et al’s teaching of introducing a surfactant in a composition enhances the performance of the composition by forming a steric hinderance barrier between the substrate and the particles (col. 15, lines 11-14).” See, final Office Action, page 2, lines 4-11. However, the Labib et al. patent’s teaching of enhanced performance is in the context of introducing a surfactant into a mixed-phase cleaning solution for removing biofilm, debris, contaminants and the like from surfaces of passageways. See, Labib et al., col. 1, lines 8-12 and col. 15, lines 1-22. The superfinishing polish slurry described in the primary reference to Hartog et al. is not a cleaning solution, is not mixed-phase, and is not for removing biofilm, debris, contaminants and the like from surfaces of passageways. It would not have been obvious to one of ordinary skill in the art to apply teachings of the Labib et al. patent relating to a mixed-phase cleaning solution for removing biofilm, debris, contaminants and the like from surfaces of passageways to the superfinishing polish slurry described in the Hartog et al. patent. Moreover, the steric effect in the Labib et al. patent is between surfaces of passageways and biofilm, debris, contaminants and the like, not between a substrate and colloidal particles as claimed.

Also in the final Office Action, the Examiner states “Additionally, if the surfactant is added to the composition of Hartog et al, the modified composition will promote the polishing/removing or may be cleaning efficiency (see the rejection). Examiner also states that both the polishing and cleaning are related art and well known as used to remove materials from a surface and it is desirable to remove particles or residue from a surface with faster rate as modified with the teaching of Labib et al. It is noted that polishing is nothing but removing materials from a surface (see the rejection). Furthermore, the superfinishing of a surface of a substrate is an intended use of the composition and the modified composition is capable of superfinishing a surface with the advantage of having the polished surface more cleaner. Therefore, one of ordinary skill in the art would have been motivated to apply the Labib et al’s teaching into Hartog et al’s teaching in order to have a cleaner polished surface and it is desirable to an ordinary skill in the art, to have a cleaner surface in a subsequent processing of the polished surface.” See, final Office Action, page 2, line 12 through page 3, line 7. These additional motivations provided by the Examiner find no basis in the prior art, however, and are speculative at best. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art, not applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The appellant respectfully submits that the teaching or suggestion to make the claimed combination and the reasonable expectation of success are based on impermissible hindsight gleaned from the applicant’s disclosure, not the prior art. It is improper to use the inventor’s patent application as an instruction book on how to reconstruct the prior art. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 USPQ2d 1593 (Fed. Cir. 1987).

There is no reasonable expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner. As

mentioned above, the teachings of the Labib et al. patent referred to by the Examiner are in the context of a mixed-phase cleaning solution for removing biofilm, debris, contaminants and the like from surfaces of passageways. See, Labib et al., col. 1, lines 8-12 and col. 15, lines 1-22. The cleaning solution disclosed in the Labib et al. patent is mixed-phase, i.e., a gas and a liquid, and is for removing biofilm, debris, contaminants and the like from the surfaces of passageways. See, Labib et al., col. 1, lines 8-12. There is no reasonable expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner. The Hartog et al. patent's slurry is the very source of the colloidal particles sought to be removed. Labib et al. teaches adding surfactant to a cleaning solution, not to the source of the biofilm, debris, contaminants and the like that the Labib et al. patent seeks to remove. There is no reasonable expectation of success in applying this teaching of Labib et al. to the Hartog et al. patent's slurry, which is the source of the colloidal particles sought to be removed. The Hartog et al. patent's slurry is used to polish a disk substrate surface, which is an entirely different environment of use than passageways of various medical devices that the Labib et al. patent teaches may be cleaned using its mixed-phase cleaning solution. There is no reasonable expectation of success in applying the teachings of Labib et al. to the Hartog et al. patent's slurry because the environments of use are so vastly different. Labib et al. teaches removing biofilm, debris, contaminants and the like from the surfaces of passageways, which is entirely different than removing colloidal particles from a surface to a disk substrate. There is no reasonable expectation of success in applying the teachings of Labib et al. to the Hartog et al. patent's slurry because the materials sought to be removed and the surfaces from which the materials are sought to be removed from are so vastly different. In addition, the Labib et al. patent teaches that the steric effect, when combined with the mechanical action of mixed-phase flow, promotes faster and more efficient cleaning and removal of residues. See, Labib et al., col. 15, lines 11-14. The

superfinishing polish process and slurry described in the primary reference to Hartog et al. does not involve mixed-phase flow. Because the *combination* taught by the Labib et al. patent is absent (i.e., the mechanical action of mixed-phase flow in addition to the steric effect), there is no reasonable expectation of success in modifying the primary reference to Hartog et al. or combining the reference teachings as suggested by the Examiner.

The secondary reference to Small et al. is cited for allegedly teaching “a composition comprises colloidal particles of silica or alumina (aluminum oxide) having a pH of about 3.8 - 9.4 for maintaining the zeta potential of the slurry composition in order clean or remove the residue efficiently (col. 10, lines 8-15, col. 10, lines 48-51 and col. 11, lines 4-7).” However, the secondary reference to Small et al. does not cure the deficiency in the primary reference to Hartog et al. relative to a surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles.

Claims 2-18 and 36 respectively depend, directly or indirectly, from independent claims 1 and 35, and set forth all of the limitations therein plus additional limitations that are not disclosed or suggested by the cited art. For example, claim 15 requires the surfactant to be a nonionic and/or cationic surfactant that is a nitrogen containing compound selected from a group consisting of alkaloids and amines, and combinations thereof. The cited art, including the Labib et al. patent, fails to disclose or suggest a nonionic and/or cationic surfactant that is a nitrogen containing compound selected from a group consisting of alkaloids and amines. Claim 16 requires the surfactant to be a nonionic and/or cationic surfactant that is a polydentate adsorption surfactant. The cited art, including the Labib et al. patent, fails to disclose or suggest a nonionic and/or cationic

surfactant that is a polydentate adsorption surfactant. By such additional limitations, and for the reasons discussed above with respect to independent claims 1 and 35, the Applicants respectfully submit that dependent claims 2-18 and 36 also patentably define over the prior art.


Therefore, the Applicants respectfully request reconsideration and withdrawal of these rejections of claims 1-18, 35 and 36 under §103(a).

III. Conclusion

In view of the foregoing comments, the Applicants respectfully submit that all of the pending claims (i.e., claims 1-18, 35 and 36) are in condition for allowance and that the application should be passed to issue.

If a conference would be of value in **expediting the prosecution of this application, and possibly avoiding the delay of an appeal process**, the Examiner is hereby encouraged to telephone the undersigned counsel at (847) 462-1937 to arrange for such a conference.

Respectfully submitted,

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